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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/550,167	04/14/2000	Hiroaki Sudo	JEL31064	8830

7590 11/02/2004
Stevens Davis Miller & Mosher LLP
Suite 850
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Washington, DC 20036

EXAMINER

PIZARRO, RICARDO M

ART UNIT	PAPER NUMBER
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2661

DATE MAILED: 11/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/550,167

Applicant(s)

SUDO ET AL.

Examiner

Ricardo Pizarro

Art Unit

2661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 August 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 31 is/are allowed.
- 6) ☒ Claim(s) 19-21, 23, 26, 27, 29 and 30 is/are rejected.
- 7) ☒ Claim(s) 22, 24 and 25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

FINAL ACTION

Claim Objections

1. Claim 30 is objected to because of the following informalities and it is suggested to applicant:

In claim 30 line 7 insert "or" before " a null signal" and before " an inverted 'symbol".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 21 is rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. Claims 21 includes the limitation "IFFT processor" while the specification discloses an FFT device for the receiving section of the OFDM apparatus critical or essential to the practice of the invention, is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. Claim 26 is rejected under 35 U.S.C. 102(a) as being anticipated by admitted prior art.

Admitted prior art (Figs 1 and 2) disclose an OFDM receiving apparatus (Receiver side in Fig. 1) comprising: a correlation value calculator that calculates a correlation value of a reception signal from symbols for synchronization pull-in in the reception signal (correlation of signal contained in receiver, page three of spec lines 6-9) ; a detector that detects a level of the reception signal (page two of spec, line13); and a symbol synchronizer that establishes symbol synchronization based on the level of the reception signal and a result of a threshold determination of the correlation value (page two of spec, lines 26-27, page three lines 1-3), as in claim 26.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

Art Unit: 2661

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 19, 20, 21, 23 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art and Sano.

Admitted Prior art (Figs. 1 and 2) discloses an OFDM transmission apparatus comprising (Fig. 1) an adder that adds symbols for synchronization pull-in to a valid symbol , said symbols for synchronization pull-in comprising a synchronization symbol (synchronization symbol 21 in Fig. 2) and a phase reference symbol (phase reference symbol 22 in fig. 2) that is identical to the synchronization symbol; and an inserter that inserts a synchronization symbol (element 2 in Fig. 1), as in claims 19 , 20, 23 and 30, a delayer that delays a reception signal comprising symbols for synchronization (Delay section in Fig. 1) and a symbol synchronizer that establishes symbol synchronization by carrying out a threshold determination of the calculated correlation value (page three of the spec, lines 1-3), as in claims 20 and 21; an FFT-processor (element 12 in fig. 1) that performs FFT-processing of a phase reference symbol included in a reception signal , said reception signal comprising symbols for synchronization pull-in including a synchronization symbol(synchronization symbol 21 in Fig. 2) and the phase reference symbol (phase reference symbol 22 in fig. 2) that is identical to the synchronization symbol, as in claim 21.

The prior art did not specifically disclose the insertion of a correlation suppression signal, as in claims 19 , 23 and 30, the , and an inverted signal, which is a symbol used for synchronization pull-in with an inverted polarity, as in claim 30.

US patent No. 6,381,251 (Sano et al) discloses an OFDM transmission apparatus including an inserter to insert a null symbol subsequent to a synchronization symbol (col 8 lines 63-657, col 9 lines 1-8), as in claims 19, 23 and 30; , and an inverted signal, which is a symbol used for synchronization pull-in with an inverted polarity, (sweep signal and inverted signal , col 7 lines 17-27) as in claim 30.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to provide the synchronization signal as disclosed by Sano to the apparatus disclosed by the prior art with the motivation of obtaining an OFDM apparatus capable of effecting detection of synchronization signals more stably

5. Claims 27 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art and Sano

Admitted prior art discloses an OFDM transmission apparatus (Transmitter side in Fig. 1) comprising: an adder that adds a symbol for synchronization pull-in to a valid symbol (col 5 lines 20-30); an inserter that inserts a correlation value suppression signal immediately after the symbol for synchronization pull-in (col 2 lines 53-59) ; and an interval changer that adaptively changes an interval that the correlation value suppression signal occupies, according to a communication environment, as in claim 27.

Admitted prior art did not specifically disclose adaptively changing (level and interval) correlation values as in claims 27 and 29.

US patent No. 6,246,735 (Sano et al) discloses a synchronization detection method for data transmission apparatus, comprising an adaptive correlation calculator(col 14 lines 61-67, col 15 lines 1-5) .

Therefore it would have been obvious to a person of ordinary skill in the art to provide the adaptive correlation means as disclosed by Sano to the admitted prior art with the motivation of obtaining a synchronization detection capable of detecting a null section even if a level of the received signal is varied due too mixing of large noise and occurrence of multi-path fading.

Allowable Subject Matter

6. 31 is allowed.
7. Claims 22, 24 and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claim.

Conclusion

8. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

Art Unit: 2661

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any response to this final action should be mailed to:

Box AF

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-93106

(for formal communications; please mark "EXPEDITED PROCEDURE", for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to 22- 20th Street S, Crystal Plaza Two, Lobby, Room 1B03, Arlington , VA 22202 (Customer window).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Ricardo Pizarro** whose telephone number is **(571) 272-**

Art Unit: 2661

3077. The examiner can normally be reached on Monday-Thursday from 9:00 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Kenneth Vanderpuye** on (571) 272-3078.

October 26, 2004

Ricardo M. Pizarro



**KENNETH VANDERPUYE
PRIMARY EXAMINER**